

particular nucleotides of the artificial regulatory sequences where it was expected.

On Figure 7, there are pictures of characteristic beta-galactosidase staining patterns in different parts of the fly
5 brain resulted from crossing positive gene trap lines with flies harboring a UAS-lacZ construct.

~~Industrial Applicability~~

The vector system of this invention offers an
10 exceptional opportunity for easy and fast cloning of the gene responsible for the observed phenotype. Furthermore, by using the UAS-driven coding sequence of any gene of interest, that particular gene can be expressed in identical patterns than those of the trapped genes and these expressions can be
15 regulated temporarily at any desired developmental stage.

Sequence Listing

- <110> Japan Science and Technology Corporation
<120> A Vector for Gene Trap, and A Method for Gene Trapping
20 by Using The Vector
<150> Japan, Application No. 10-141952
<151> 22 May 1998
<160> 1
<170> PatentIn Ver. 2.0
25 <210> 1
<211> 11206
<212> DNA
<213> Artificial sequence
<220>
30 <221> 3' P sequence

- TOC2020-01000000
- <222> (1) .. (237)
<220>
<221> synthetic splicing acceptor site and stop/start
sequence
5 <222> (238) .. (274)
<220>
<221> Gal4 gene (coding region and 3' UTR)
<222> (275) .. (3164)
<220>
10 <221> hsp70 terminator
<222> (3165) .. (3426)
<220>
<221> synthetic junction sequence
<222> 3427-3457
15 <220>
<221> heat shock promoter directed neomycine resistance gene
on complementar strand
<222> (3458) .. (4907)
<220>
20 <221> mini-white gene
<222> (4908) .. (8275)
<220>
<221> synthetic splicing donor site
<222> (8276) .. (8299)
25 <220>
<221> 5' P sequence
<222> (8300) .. (8446)
<220>
<221> bacterial part of pCasper3 shuttle vector including
30 complete pUC8 sequence

<222> (8447) .. (11206)

<220>

<221> synthetic DNA

<222> (238) .. (274)

5 (3427) .. (3457)

(4908) .. (4914)

(8276) .. (8299)

<400> 1

catgatgaaa taacataagg tgggtcccgctc ggcaagagac atccacttaa cgtatgcttg 60
10 caataagtgc gaggtaaagg aatagtattc tgagtgtcgt attgagtctg agtgagacag 120
cgatatgatt gttgattaac ccttagcatg tccgtggggg ttgaattaac tcataatatt 180
aattagacga aattattttt aaagttttat tttaataat ttgcgagtac gcaaagctct 240
ttctcttaca ggtcgaattg atgtgatgga tcaatgaag ctactgtctt ctatcgaaca 300
agcatgcgat atttgccgac ttaaaaagct caagtgtcc aaagaaaaac cgaagtgcgc 360
15 caagtgtctg aagaacaact gggagtgtcg ctactctccc aaaaccaaaa ggtctccgct 420
gactagggca catctgacag aagtgaatc aaggctagaa agactggaac agctatttct 480
actgattttt cctcgagaag acctgacat gatattgaaa atggattctt tacaggatat 540
aaaagcattg ttaacaggat tattgtaca agataatgtg aataaagatg ccgtcacaga 600
tagattggct tcagtggaga ctgatatgcc tctaacattg agacagcata gaataagtgc 660
20 gacatcatca tcggaagaga gtagtaacaa aggtcaaaga cagttgactg tatcgattga 720
ctcggcagct catcatgata actccacaat tccgttggat tttatgcccc gggatgctct 780
tcatggattt gatgtgtctg aagaggatga catgtcggat ggcttgccct tctgaaaaac 840
ggacccaac aataatgggt tctttggcga cgtttctctc ttatgtattc ttogatctat 900
tggttttaaa ccggaatac acacgaactc taacgttaac aggtcccca ccatgattac 960
25 ggatagatac acgttggctt ctatgccac aacatcccgt ttacttcaaa gttatctcaa 1020
taattttcac cctactgcc ctatcgtgca ctaccgacg ctaatgatgt tgtataataa 1080
ccagattgaa atcgcgtcga aggatcaatg gcaaatcctt tttaactgca tattagccat 1140
tgagacotgg tgtatagagg gggaatctac tgatatagat gtttttact atcaaatgc 1200
taaattctcat ttgacgagca aggtcttoga gtcaggttcc ataattttgg tgacagccct 1260
30 acatcttctg tcggatata cacagtggag gcagaaaaca aatactagct ataattttca 1320

cagcttttcc ataagaatgg ccatatcatt gggcttgaat agggacctcc cctcgtcctt 1380
 cagtgatagc agcattctgg aacaaagacg ccgaatttgg tggctctgtc actcttggga 1440
 gatccaattg tccctgcttt atggtcgac ccatcagctt tctcagaata caatctcctt 1500
 ccttctctct gtcgacgatg tgcagcgtac cacaacaggt cccaccatct atcatggcat 1560
 5 cattgaaaca gcaaggctct tacaagtttt cacaaaaatc tatgaactag acaaaacagt 1620
 aactgcagaa aaaagtctta tatgtgcaaa aaaatgcttg atgatttgta atgagattga 1680
 ggaggtttcg agacaggcac caaagttttt acaaatggat atttcacca ccgtctaac 1740
 caatttggtg aaggaacacc ctggctatc cttacaaga ttggaactga agtggaaca 1800
 gttgtctctt atcatttatg tattaagaga ttttttact aattttacc agaaaaagtc 1860
 10 acaactagaa caggatcaaa atgatcatca aagttatgaa gttaaacgat gctcatcat 1920
 gttaagcgat gcagcacaaa gaactgttat gctctgaagt agctatatgg acaatcataa 1980
 tgtcacccca tattttgcct ggaattgttc ttattacttg ttcaatgcag tctagtagcc 2040
 cataaagact ctactctcaa actcaaaatc gaatgctgag aataacgaga ccgcacaatt 2100
 attacaacaa attaacactg ttctgatgct attaaaaaaa ctggccactt ttaaaatcca 2160
 15 gacttgtgaa aaatacattc aagtactgga agaggtatgt gcgccgtttc tgttatcaca 2220
 gtgtgcaatc ccattaccgc atatcagtta taacaatagt aatggtagcg ccattaaaaa 2280
 tattgtcggc tctgcaacta tcgcccaata cctactctt ccggaggaaa atgtcaacaa 2340
 tatcagtggt aaatatgttt ctctggctc agtagggcct tcacctgtgc cattgaaatc 2400
 aggagcaagt ttcatgtac tagtcaagct gttatctaac cgtccacctc ctctgaactc 2460
 20 tccagtgaca ataccaagaa gcacaccttc gcatcgtca gtcacgcctt ttctagggca 2520
 acagcaacag ctgcaatcat tagtgccact gaccccgctc gotttgtttg gtggcgccaa 2580
 ttttaatcaa agtgggaata ttctgatag ctcatgtcc ttactttca ctaacagtag 2640
 caacggctcg aacctcataa caactcaaac aaattctcaa gcgctttcac aaccaattgc 2700
 ctctctaac gttcatgata acttcatgaa taatgaaatc acggctagta aaattgatga 2760
 25 tggtataaat tcaaaaccac tgtcacctgg ttggacggac caaactgcgt ataacgcgtt 2820
 tggaatcact acagggatgt ttaataccac tacaatggat gatgtatata actatctatt 2880
 cgatgatgaa gataccacac caaaccacaa aaaagagtaa aatgaatcgt agatactgaa 2940
 aaaccccgca agttcacttc aactgtgcat cgtgcacat ctcaatttct ttcatttata 3000
 catcgttttg ccttctttta tgtaactata ctctctaaag ttccaatttt ggccatgtaa 3060
 30 cctctgatct atagaatttt ttaaatgact agaattaatg cccatctttt ttttgacct 3120

aaattcttca tgaaaatata ttacgagggc ttattcagaa gcttatcgat accgtcgact 3180
 aaagccaaat agaaattatt cagttctggc ttaagttttt aaaagtata ttatttattt 3240
 ggttgtaacc aacaaaaga atgtaataa ctaatacata attatgtag ttttaagtta 3300
 gcaacaaatt gatttiagct atattagcta cttgggtaat aaatagaata tatttattta 3360
 5 aagataattc gtttttattg tcaggagtg agtttgctta aaaactcgtt tagatocact 3420
 agaaggaccg cggtcctcgc accggatcga aaggaggcg aagaactcca gcatgagatc 3480
 cccgcgctgg aggatcatcc agccggcgc cgggaaaacg attccgaagc ccaactttc 3540
 atagaaggcg gcggtggaat cgaaatctgc tgatggcagg ttgggcgcgc cttggtcggt 3600
 catttcgaac ccagagtcgc cgctcagaag aactcgtcaa gaaggcgata gaaggcgatg 3660
 10 cgctgcgaat cgggagggc gataccgtaa agcacgagga agcggtcagc ccattcgccg 3720
 ccaagctctt cagcaatatc acgggtagcc aacgctatgt cctgatagcg gtccgccaca 3780
 ccagccggc cacagtcgat gaatccagaa aagcggccat ttccaccat gatattcggc 3840
 aagcaggcat cgccatgggt cagcagcaga tcctcgccgt cgggcagcgc cgccttgagc 3900
 ctggcgaaca gttcggctgg cgcgagcccc tgatgctctt cgtccagatc atcctgatcg 3960
 15 acaagaccgg cttccatccg agtacgtgct cgttcgatgc gatgtttcgc ttggtggtcg 4020
 aatgggcagg tagccggatc aagcgtatgc agcggcgca ttgcatcagc catgatggat 4080
 actttctcgg caggagcaag gtgagatgac aggagatcct gcccggcac ttcgccaat 4140
 agcagccagt cccctccgc ttcagtgaca acgtcgagca cagctgcgca aggaacgccc 4200
 gtcgtggcca gocacgatag ccgcgctgcc tcgtcctgca gttcattcag ggcaccggac 4260
 20 aggtcggctc tgacaaaaag aaccggcgcc cctgcgctg acagccggaa cacggcggca 4320
 tcagagcagc cgattgtctg ttgtgcccag tcatagccga atagcctctc caccacagcg 4380
 gccggagaac ctgcgtgcaa tccatcttgt tcaatcatgc gaaacgatcc tcatcctgtc 4440
 tcttgatcag atccctatt cagagttctc ttcttgatt caataattac ttcttgccag 4500
 atttcagtag ttgcagtga ttacttgggt tgctggttac ttttaattga ttactttaa 4560
 25 cttgcacttt actgcagatt gtttagcttg ttcagctgcg cttgtttatt tgcttagctt 4620
 tcgcttagcg acgtgttcac ttgcttggt tgaattgaat tgcgctccg tagacgaagc 4680
 gcctctattt atactccgcg gctcttttcg cgaacattcg aggcgcgctc tctcgaacca 4740
 acgagagcag tatgccgttt actgtgtgac agagtgcgag agcattagtg cagagaggga 4800
 gagaccocaa aagaaaagag agaataacga ataacggcca gagaaatttc tcgagtttc 4860
 30 ttctgcgcaa acaaatgacc taccacaata accagtttgt ttgggatct agtcctaata 4920

tctagtatgt atgtaagtta ataaaaccct tttttggaga atgtagattt aaaaaaacat 4980
 attttttttt tattttttac tgcaactggac atcattgaac ttatctgac agtttttaaat 5040
 ttacttogat ccaagggtat ttgaagtacc aggttcttct gattacctct cactcaaaat 5100
 gacattccac tcaaagtcag cgctgtttgc ctcttctct gtccacagaa atatgccgt 5160
 5 ctctttggcc gctgcgtccg ctatctottt cgccaccgtt tgtagcgta cctagcgta 5220
 atgtccgcct tcagttgcac tttgtcagcg gtttcgtgac gaagctcaa gcggtttacg 5280
 ccatcaatta aacacaaagt gctgtgcaa aactctctc gcttcttatt ttgtttgtt 5340
 ttttgagtga ttgggttggt gattggtttt gggtgggtaa gcaggggaaa gtgtgaaaaa 5400
 tcccgcgaat gggccaagag gatcaggagc tattaattcg cggaggcagc aaacacccat 5460
 10 ctgccgagca tctgaacaat gtgagtagta catgtgcata catottaagt tcacttgac 5520
 tataggaact gcgattgcaa catcaaattg tctgcggcgt gagaactgcg acccacaana 5580
 atcccaaacc gcaatcgac aaacaaatag tgacacgaaa cagattatc ttgtagctgt 5640
 gctcgtata taagacaatt ttaagatca tatcatgac aagacatcta aaggcattca 5700
 ttttcgacta cattcttttt tacaanaaat ataacaacca gatatttta gctgaccta 5760
 15 gatgcacaaa aaataaataa aagtataaac ctacttcgta ggatacttcg tttgttcgg 5820
 ggtagtagta gcataacgt tgtagttgat atttgagac cctatcatt gcagggtgac 5880
 agcggacgt tgcagagct gcattaaaca gggttcggg caggcaaaa actacggcac 5940
 gctcctgca ccagtcgc cggaggactc cggttcaggg agcggccaac tagccgagaa 6000
 cctcacotat gcctggcaca atatggacat ctttggggcg gtcaatcagc cgggctccgg 6060
 20 atggcggcag ctggtcaacc ggacacgcgg actattctgc aacgagcgac acataccggc 6120
 gccaggaaa catttgctca agaacggtga gttctattc gcagtcggct gatctgtgtg 6180
 aaatctaat aaagggtca attaccaatt tgaaactcag tttgcggcgt ggcctatccg 6240
 ggcgaaattt tggcgtgat gggcagttcc ggtgocggaa agacgacct gctgaatgcc 6300
 cttgccttct gatcgccga gggcatocaa gtatgccat ccgggatgog actgctcaat 6360
 25 ggccaacctg tggacgcaa ggagatgcag gccagggtcg octatgtoca gcaggatgac 6420
 ctctttatcg gctocctaac ggccaggga cacctgattt tccaggccat ggtgcggatg 6480
 ccacgacatc tgacctatcg gcagcgagt gcccgcgtgg atcaggtgat ccaggagctt 6540
 tcgctcagca aatgtcagca cagcatatc ggtgtgcccg gcagggtgaa aggtctgtcc 6600
 ggcgagaaa ggaagcgtct ggcattcgcc tccaggcac taaccgatcc gccgttctg 6660
 30 atctgcgatg agccacctc cggactggac tcatttaccg ccacagcgt cgtccagggtg 6720

ctgaagaagc tgtcgcagaa gggcaagacc gtcacactga ccattcatca gccgtcttcc 6780
gagctgtttg agctctttga caagatcctt ctgatggccg agggcagggt agctttcttg 6840
ggcactccca gcgaagccgt cgacttcttt tctagttag ttcgatgtgt ttattaaggg 6900
tatctagcat tacattacat ctcaactcct atccagcgtg ggtgccagct gtctaccaa 6960
5 ctacaatccg gcggactttt acgtacaggt gttggccgtt gtgccggac gggagatcga 7020
gtcccgatg atcgatcgca agatatgcga caattttgct attagcaaag tagcccgga 7080
tatggagcag ttgttgcca ccaaaaattt ggagaagcca ctggagcagc cggagaatgg 7140
gtacacctac aaggccacct ggttcagca gttccggcg gtctgtggc gatcctggt 7200
gtcgggtgctc aaggaaaccac tctcgtaaa agtgcgactt attcagaaa cggtagtg 7260
10 ttccagtga aacaaatgat ataacgcta caattcttg aaacaaatc gctagatttt 7320
agttagaatt gcctgattcc acacccttct tagtttttt caatgagatg tatagtttat 7380
agttttgcag aaaataaata aatttcattt aactcgcaa catgttgaag atatgaatat 7440
taatgagatg cgagtaacat ttaatttgc agatggttc catcttgatt gccctcatct 7500
ttttggcca acaactcacg caagtggcg tgatgaatat caacggagcc atcttctct 7560
15 tctgaccaa catgacctt caaacgctt ttgccagat aaatgtaagt cttgtttaga 7620
atacatttgc atattaataa tttaactaact tttaaatgaa tcgattcgat ttaggtgttc 7680
acctcagagc tgccagtttt tatgaggag gcccgagtc gactttatcg ctgtgacaca 7740
tactttctgg gcaaacgat tgccgaatta ccgctttttc tcacagtgc actggtcttc 7800
acggcgattg cctatccgat gatcggaactg cggcgccgag tgctgcactt ctcaactgc 7860
20 ctggcgctgg tcaactcgtt gcccaatgtg tcaacgtcct tcggatatct aatctctgc 7920
gccagctcct cgacctcgat ggcgctgtct gtgggtccgc cggttatcat accattcctg 7980
ctctttggcg gcttcttctt gaactcgggc tcggtgccag tatacctcaa atggttgcg 8040
tacctctcat ggttcggtta cgccaacgag ggtctgctga ttaaccaatg ggcggacgtg 8100
gagccggcg aaattagctg cacatcgtc aacaccagct gcccagttc gggcaaggtc 8160
25 atcctggaga gccttaactt ctccgccgc gatctgcgc tggactacgt ggtctggcc 8220
attctcatcg tgagcttcg ggtgctcgca tatctggctc taagacttcg ggccgacgc 8280
aaggagtag aggtaagtag cggcgcacg taagggttaa tgttttcaa aaaaaattcg 8340
tcgcacaca accttctct tcaacaagca aacgtgact gaatttaagt gtatacttcg 8400
gtaagcttcg gctatcgacg ggaccacctt atgttatttc atcatgggc agaccacgt 8460
30 agtccagcgg cagatcgcg gcggagaagt taagcgtctc caggatgacc ttgccgaac 8520

tggggcacgt ggtgttcgac gatgtgcagc taatttggcc cggctccacg tccgccatt 8580
ggttaatcag cagaccctcg ttggcgtaac ggaaccatga gaggtacgac aaccatttga 8640
ggtatactgg caccgagccc gagttcaaga agaaggcgtt ttccatagg ctccgcccc 8700
ctgacgagca tcacaaaaat cgacgtcaa gtcagagggtg gcgaaacccg acaggactat 8760
5 aaagatacca gggttttccc cctggaagct cctcgtgcg ctctcctgtt ccgaccctgc 8820
cgcttaccgg atacctgtcc gcctttctcc ctccgggaag cgtggcgctt tctcaatgct 8880
cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc caagctgggc tgtgtgcacg 8940
aaccocccgt tcagcccgac cgtgcgcct tatccgtaa ctatcgtctt gattccaacc 9000
cggtaagaca cgacttatog ccaactggcag cagccactgg taacaggatt agcagagcga 9060
10 ggtatgtagg cgggtctaca gatttcttga agtgggtggc taactacggc tacactagaa 9120
ggacagtatt tggatatcgc gctctgctga agccagttac ctccgaaaa agagttagta 9180
gctcttgatc cggcaaaaca accaccgctg gtagcgggtg tttttttgtt tgcaagcagc 9240
agattacgcg cagaaaaaaa ggatctcaag aagatccttt gatcttttct acggggtctg 9300
acgctcagtg gaacgaaac tcacgttaag ggattttgt catgagatta tcaaaaagga 9360
15 tcttcaccta gatcctttta aattaaaaat gaattttta atcaatctaa agtatatatg 9420
agtaaaactg gtctgacagt taccaatgct taatcagtg ggacctatc tcagcgatct 9480
gtctatttcg ttcattcata gttgcctgac tcccgtcgt gtagataact acgatacggg 9540
agggttacc atotggcccc agtctgcaa tgataccgag agaccacgc tcaccggctc 9600
cagatttacc agcaataaac cagccagcgg gaaggcgcca gcgcagaagt ggtcctgcaa 9660
20 ctttatccgc ctocatccag tctattaatt gttgcccggg agctagagta agtagttcgc 9720
cagttaatag ttgcgcaac gttgttgcca ttgctacagg catcgtggtg tcacgctcgt 9780
ogtttggtat ggcttcattc agctccggtt cccaacgac aaggcgagtt acatgatccc 9840
ccatgttgtg caaaaaagcg gttagctcct tcggtcctcc gatcgttgtc agaagtaagt 9900
tgcccgagcgt gttatcactc atggttatgg cagcactgca taattctctt actgtcatgc 9960
25 catccgtaag atgcttttct gtgactggtg agtactcaac caagtcattc tgagaatagt 10020
gtatgcggcg accgagttgc tcttgcccgg cgtcaacacg ggataatacc gcgccacata 10080
gcagaacttt aaaagtgtc atcattggaa aacgttcttc gggcgaaaa ctctcaagga 10140
tcttaccgct gttgagatcc agttcgatgt aaccactcg tgacccaac tgatcttcag 10200
catcttttac tttcaccagc gtttctgggt gagcaaaaac aggaaggcaa aatgccgcaa 10260
30 aaaagggaat aaggcgagca cggaaatgtt gaatactcat actcttctt tttcaatatt 10320

[illegible]